

Project: B-3450  
County: Durham



PROJECT SPECIAL PROVISIONS  
Utility Construction

I. GENERAL CONSTRUCTION REQUIREMENTS:

Specifications:

The proposed utility construction shall meet the applicable requirements of the NC Department of Transportation's "Standard Specifications for Roads and Structures" dated January 2002, and the following provisions.

Lay water mains at least 10 feet laterally from existing or proposed sanitary sewers.

The depth of pipeline installation may vary to achieve minimum clearance of existing or proposed utilities or storm drainage while maintaining minimum cover specified (whether existing or proposed pipelines, conduits, cables, mains and storm drainage are shown on the plans or not).

After the installed pipe, fittings, valves, hydrants, corporation stops and end plugs are inserted and secured, the pipe line shall be subjected to a hydrostatic pressure test of 200 psi for a period of 3 hours, by pumping the section full of clean water using an approved pressure pump. Cross connection for flushing and chlorination shall be made by means of a temporary connection from the supply pipe with an approved backflow prevention device. Taps for the cross connection piping shall be made to the portion of the existing water main that will be removed from service. The proposed water main shall be laid to within one pipe length of the point of final connection prior to flushing and testing. All flushing and chlorination work shall be performed in accordance with AWWA C651-99. All fittings, valves and backflow prevention devices required for chlorination and testing shall be incidental to the cost of the proposed pipe being tested.

Contractor shall make such arrangements, as the utility owner requires, for measuring and paying for water required to flush and test water mains.

The City of Durham's chemist shall do all bacteriological testing for new water lines. The contractor shall not activate new water mains until the City of Durham approves the bacteriological testing.

The contractor shall replace the existing fire hydrants that are relocated with a new fire hydrant supplied by City of Durham. The contractor shall stockpile the

existing fire hydrant within the limits of the project and contact the City of Durham to have the fire hydrant removed.

#### Owner and Owner's Requirements:

The existing utilities belong to the City of Durham. The Contractor shall provide access for the owner's representatives to all phases of construction. Notify the owner two weeks before commencement of any work and one week before service interruption. The contractor shall provide the City of Durham with as built drawings for the proposed water mains installed.

The contractor shall provide a set of as built plans to the City of Durham after all the work shown on the Utility Construction Plans is completed.

#### Utility Locations Shown on the Plans:

The location, size, and type material of the existing utilities shown on the plans are from the best available information. The Contractor will be responsible for determining the exact location, size, and type material of the existing facilities

#### 1. BEDDING MATERIAL:

Bedding material for utility lines shall be installed in accordance with the applicable utility provisions herein, as shown on the utility construction plans, and/or as directed by the Engineer.

Bedding material shall meet the requirements of Article 1016-3 of the Standard Specifications. Bedding material shall be installed in accordance with Articles 300-6 and 300-7 of the Standard Specifications.

Bedding material installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per ton for "Bedding Material, Utilities Class IV". Such prices and payments shall be full compensation for all materials, labor, equipment, compaction and shaping the bedding material in accordance with Article 300-4 of the Standard Specifications, and incidentals necessary.

#### 2. HDPE WATER PIPE BY DIRECTIONAL BORE:

High-density polyethylene (HDPE) Water Pipe shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

HDPE Water Pipe shall be manufactured in accordance with ANSI/AWWA C906 (Polyethylene Pressure Pipe and Fittings, 4" through 64", For Water Distribution,

Ductile Iron Pipe Size (DIPS)). HDPE pipe materials shall be made from materials conforming to standard PE code designation PE 3408.

The Contractor shall furnish fittings necessary to connect the DI Water Pipe to the HDPE, and fuse the fittings onto each end of the HDPE section of Water line.

Concrete for thrust restraint shall be class A concrete meeting the requirements of Section 1000 of the Standard Specification. The concrete shall be placed around the pipe as shown on the plans and/or as directed by the Engineer. The proposed HDPE water pipe shall have a fitting with an integral ring for thrust restraint fused into the pipe string adjacent to the proposed adapter from HDPE to the DI fitting. The proposed DI reducer shall be tied to the concrete thrust collar by threaded rods.

The reinforcing steel shall meet the requirements of Section 1070 of the Standard Specifications. Reinforcing steel shall be placed in the center of the thrust block and shall be tied to the threaded rods.

Threaded rods shall be ASTM A36 steel and shall match the diameter of the bolts in the coupling and/or ductile iron water pipe fitting, but shall be no less than 3/4" diameter. The proposed transition coupling and/or the nearest ductile iron water pipe fitting shall be tied to the thrust block. A minimum of four threaded rods shall be used, located as shown on the plans.

Drilling fluid shall consist of a bentonite slurry. Admixtures may be added which are suitable to the site conditions encountered.

HDPE Water line shall be fused prior to placement beneath the stream noted on the plans. Join pipe segments by cutting ends square, heating and fusing under sufficient pressure to create a single length of pipe sufficient to complete installation in one continuous pulling operation. The pipe manufacturer's listing of fusion parameters, validated by appropriate testing, and the parameters of the Contractor's fusion systems, shall be submitted to the Resident Engineer prior to fusing segments of HDPE Water Pipe into the pipe string.

After installation, the HDPE Water Pipe string shall be tested under the stream to a hydrostatic pressure of 200# in accordance with the testing procedures outlined in Section 1510 of the Standard Specifications.

HDPE Water Pipe shall be installed beneath the stream by boring or drilling a small pilot hole along a parabolic arc beneath the stream. A minimum cover of 3' shall be maintained over the HDPE Water Pipe at all times. Enlarge the pilot hole by use of a reamer or reamers to the desired diameter. When the bored hole is of the diameter recommended by the pipe manufacturer for the HDPE Water line, the Contractor shall pull the pipe string through the hole by the drill

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string. Cap the pipe string during the pulling operation. The pulling operation shall incorporate a swivel connection to minimize torsional stresses imposed upon the pipe string. Fully support the pipe string before and during pull back so that the pipe string will move freely without damage.

HDPE Water Pipe installed by directional boring shall not be connected to existing pipe or fittings for one week from the time of installation to allow tensional stresses to relax.

The Contractor may elect to conduct reaming and pulling of the pipe string in one operation at the discretion of the Engineer. The reamer head shall be fitted with a sleeve to prevent possible spalling that may become lodged and prohibit the pull back of the pipe string.

Drilling fluid that does not remain in the bore hole shall be collected and disposed of property. No drilling fluid shall enter the stream.

HDPE Water Pipe, installed in accordance with the plans and provisions herein and accepted, will be measured along the pipe from end to end, with no deductions for fittings or couplings, and paid for at the contract unit price per linear foot for "20" HDPE Water Pipe, SDR 9, 200# WP by Directional Bore". Such prices and payments will be full compensation for furnishing all labor, equipment, material, couplings and fittings, excavation, installation, testing, backfilling, and incidentals necessary to complete the work as required.

### 3. GATE VALVE AND VALVE MANHOLE:

Gate valves and manholes shall be installed in accordance with the applicable utility provisions herein, as shown on the utility plans, and/or as directed by the Engineer.

Gate valves shall be resilient seat types conforming to ANSI/AWWA C509. Gate valves shall have non-rising stems with a 2" square operating nut and O-ring seals, and shall open by turning counterclockwise. Gate valves shall have mechanical joint ends conforming to ANSI/AWWA C111/A21.11 unless otherwise shown on the plans or directed by the Engineer. Gate valves shall have a design working water pressure of 200# WP.

Water valve doghouse type manholes shall be 4' diameter precast concrete, shall conform to ASTM C478 and shall be as shown on the plans.

Joints between precast manhole sections shall be O-ring rubber gaskets conforming to ASTM C-443 or butyl rubber gaskets conforming to AASHTO M198.

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Manhole frames and covers shall be of cast iron conforming to ASTM A48 Class 30, shall be traffic bearing, and shall have machined contact surfaces. Manhole frames and covers shall be as shown on plans or an approved equal.

The quantity of gate valves and valve manholes, installed in accordance with the plans and provisions herein and accepted, will be measured and paid for at the contract unit price per each "16" Gate Valve and Valve Manhole, 200# WP". Such prices and payments will be full compensation for all materials, excavation, labor, installation, sterilization, pressure testing, valve manhole, backfilling, and incidentals necessary to complete the work as required.

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COUNTY: Durham

PROJECT SPECIAL PROVISIONS  
Utility

UTILITY CONFLICTS:

General:

The following utility companies have facilities that will be in conflict with the construction of this project:

- A. Duke Power Company.
- B. Verizon Telephone Company
- C. Progress Telecommunication.
- D. PSNC Energy.
- E. City of Durham.

The conflicting facilities will be adjusted prior to the date of availability except where noted and are therefore listed in these special provisions for the benefit of the Contractor. All utility work listed herein will be done by the utility owners. All utilities are shown on the plans from the best available information.

The Contractor's attention is directed to Article 105.8 of the Standard Specifications.

Utilities Requiring Adjustment:

A. Duke Power Company.

1. See "Utility Conflict Plans" for utility conflicts.  
Note: Duke Power will relocate their facilities after clearing and grubbing. Duke Power will need 3 weeks notice and 4 weeks construction time at each detour location to complete their relocation work for each bridge.  
Permanent poles will be installed after construction is completed.

B. Vernon Telephone Company

1. See "Utility Conflict Plans" for utility conflicts.  
Note: Verizon will be joint use on Duke poles, Verizon will need 2 weeks notice and 4 weeks for construction time after Duke Power completes their relocation work.

C. Progress Telecommunication.

1. See "Utility Conflict Plans" for utility conflicts
2. Fiber Optic Telephone line will remains in place and be adjusted as necessary during construction. If adjustment is necessary Progress Telecommunication will need 2 weeks notice and 4 weeks for construction.

D. PSNC Energy.

1. See "Utility Conflict Plans" for utility conflicts.
2. PSNC Energy will complete all work prior to the date of availability.
3. The Contractor shall be cautious around the 12" relocated gas line when driving piles for the temporary bridge.

F. City of Durham.

1. See "Utility Conflict Plans" for utility conflicts.
2. Traffic signal cable system will be removed if it is necessary during construction.